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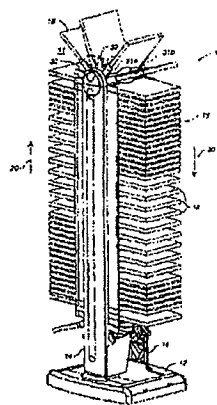
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[54] 发明名称 小型盘支架

[57] 摘要

一种按十分紧凑的方式存放珠宝盒或 CD 盒(或 CD 本身)的电动支架,该支架包括由 CD 盒或其它物品的保持架构成的连续环,其由一对链轮驱动,夹持器安装在该对链轮上。通过将夹持器和连在夹持器上的 CD 盒相互连续隔开,并使夹持器和盒子在这个垂直支架的顶部散开排列而便于拿取,从而实现高密度的存放。



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## 权 利 要 求 书

1. 一种支架和被支架夹持的物品的组合体, 包括:

5 多个夹持器, 每个夹持器包括可释放地夹持一个物品并露出夹持物品的一部分以便用手抓取物品的装置, 将多个所述夹持器联接起来构成所述夹持器的连续环的联接装置;

安装所述环以便运动的装置, 所述环将所述物品运送至散开位置以便实施选择, 在这个位置可以用手指从所述的夹持器中抓取所述物品;

10 安装所述环以便运动的装置包括: 具有一对从基座垂直向上延伸的相对且间隔开的竖直侧支撑件的垂直方向框架; 安装成在以轴颈支承在所述侧支撑件之间的轴上旋转的上、下链轮; 驱动至少一个所述链轮的装置, 所述环安装在所述上、下链轮上用来转动, 每个所述夹持器包括当绕所述链轮旋转时与链轮配合的装置;

15 所述链轮使得所述夹持器和夹持的物品在所述环的介于垂直向上和向下运动中间的转弯处散开以便实现所述物品的手工选择。

2. 根据权利要求1所述的支架, 其特征在于, 所述的联接装置具有足够的柔性, 使所述环在链轮上从上到下的方向可以转弯。

3. 根据权利要求1所述的支架, 其特征在于, 所述联接装置在每对相邻夹持器间构成了咬接铰链机构(snap together hinge mechanism)。

20 4. 根据权利要求1所述的支架, 其特征在于, 所述间隔开的竖直支撑件包括引导挡板, 每个夹持器包括与所述挡板可滑动地联接的装置, 用于沿所述间隔开的支撑件滑动夹持器。

5. 根据权利要求4所述的支架, 其特征在于, 所述引导挡板终止于所述链轮中一个的附近。

25 6. 一种夹持和陈列 CD 容器或类似物品的支架, 允许手工选择所述容器中的一个, 包括:

具有一对从基座垂直向上延伸的相对且间隔开的侧支撑件的垂直方向的框架;

30 安装成以轴颈支承在所述侧支撑件之间的轴上以便旋转的上、下链轮, 及驱动至少一个所述链轮的装置;

多个夹持器, 每个夹持器包括将多个所述夹持器联接起来构成所述夹持

器的连续环的联接装置；每个夹持器有用来接纳所述容器一个边缘的槽和一对与所述联接装置分开的柔性指状件，所述一对指状件从所述槽伸出来接纳所述容器的两个边缘，每个所述夹持器包括可释放地夹持这种容器直到手工选出的装置；

- 5 由多个所述夹持器依次柔性联接构成的所述连续环，在所述夹持器中夹持的所述容器在所述环的垂直部分充分彼此靠近；

所述环安装在所述上和下链轮上以便旋转，每个所述的夹持器包括当它们绕所述链轮转动时与所述链轮配合的装置，所述链轮为所述环的所述夹持器在所述环的竖直向上和向下运动之间提供了转弯，所述夹持器在所述转弯处散开，所述彼此贴近的容器散开实现容器的所述手工选择，所述容器从所述夹持器中释放。

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7. 根据权利要求6所述的支架，其特征在于，所述侧支撑件分段以便添加附加的侧支撑段，使所述支架的夹持容量增加。

8. 根据权利要求6所述的支架，其特征在于，上、下链轮各包括一对链轮来提供平衡驱动。
- 15

9. 根据权利要求6所述的支架，其特征在于，所述夹持器的所述指状件包括一对凸起，用于与所述容器的配合槽联接，以便可释放地夹持所述容器。

10. 根据权利要求1所述的支架，其特征在于，所述夹持器为基本上方形的壳体，可滑入小型盘并靠摩擦配合夹持。
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11. 根据权利要求10所述的支架，其特征在于，所述夹持器包括在其出口端擦除小型盘上灰尘的装置。

12. 根据权利要求10所述的支架，其特征在于，所述夹持器包括一个放所述小型盘的文字说明书的槽。

13. 根据权利要求10所述的支架，其特征在于，所述夹持器的厚度小于标准小型盘珠宝盒的一半。
- 25

14. 根据权利要求10所述的支架，其特征在于，所述夹持器壳体是透明的，以便客户可以看到插入的小型盘。

15. 根据权利要求1所述的支架，其特征在于，所述夹持器为片状保持架，具有至少一个用于保持小型盘的摩擦榫。
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## 小型盘支架

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## 技术领域

本发明涉及一种摆放如小型盘(CD)或其它类似于 CD 的物品的支架。更具体的讲, 这种支架是一种电动的存储装置, 用于容纳多至 100 个装在各自容器或所谓珠宝盒(jewel case)中的 CD, 如果使用特制的保持架, 则可容纳  
10 超过 300 个。

## 背景技术

众所周知, CD 夹持器没有运动部件, 并采用垂直架式或水平柜式结构。在这种容器中存有大量 CD 时, 很难对 CD 做挑选。对于垂直架式结构的底部, 这种难于挑选的问题更加突出。因此就需要一种电机驱动的 CD 存储装置或支架以便于挑选。还需要一种设计十分简单的电动支架, 这种支架以一种十分紧凑的方式存放珠宝盒或 CD 盒(或放在保持架上的 CD 本身)。  
15

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## 发明内容

因此本发明的目的是为摆放如 CD 这样的物品提供改进的支架。

根据上述目的, 摆放如 CD 这样的物品的支架包括: 多个夹持器, 每个夹持器包括通过摩擦和(或)柔性联接而可释放地保持一个物品的装置, 每个  
25 夹持器包括将多个夹持器联接起来构成连续环的联接装置。安装环以便运动的装置设置成用来运送选定的物品(CD)到可手动选出的位置, 在这个位置可以从夹持器中取出物品。

## 附图说明

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图 1 是示出本发明支架的透视图;

- 图 2 是图 1 中所示支架上部的详细放大的透视图;  
 图 3 是图 1 中所示支架下部的详细放大的透视图;  
 图 4 是本发明的夹持器在一个方向的透视图;  
 图 4A 是被图 4 中所示的夹持器夹持的容器的侧视图;  
 5 图 5 是图 4 中所示相同的夹持器在另一个方向的透视图;  
 图 6A 是图 4 和图 5 中多个联接起来的夹持器的侧视图;  
 图 6B 是图 6A 的剖视图;  
 图 7 是图 6A 中所示夹持器在绕链轮旋转时的侧视图;  
 图 8 是图 4 和图 5 中所示夹持器安装在图 1 所示的支架上时的剖视图;  
 10 图 9 是类似于图 1 的透视图, 图 9 切掉支架外壳来示出支架内部原理和它的运转;  
 图 10 是类似于图 1 的透视图, 是备选的实施例;  
 图 11 为备选实施例的透视图;  
 图 12 是图 11 的剖视图;  
 15 图 13 是备选实施例的透视图。

### 具体实施方式

图 1 是本发明支架的透视图, 支架上在类似传送器的装置上存放有多  
 20 个包含 CD 的容器 18 或者所谓的珠宝盒。这种支架是电动装置, 用于容纳多至 100 个放在各自珠宝盒中的 CD。这些盒子联接成环状的带, 如下面将要讨论的带由电机驱动, 通过适当的控制器可以沿顺时针方向 20 旋转至支架 11 的顶部, 容器在顶部散开, 这样就可以用手便利地取走这些容器。然而, 为了容纳大量容器 18, 这些容器通常彼此贴近地摆放(如 13 所示), 因此很  
 25 难拿取。

容器 18 的连续环竖直安装在一对相对间隔开的竖直支撑件 14 和 16 上, 支撑件 14 和 16 安装在基座 12 上, 竖直支撑件的上端包括按方向 20 或者相反的方向(需要的话)低速或高速旋转的控制器(图 1 未示出)。图 1 所示的所有结构件都是由 ABS 型塑料制成。物品或容器 18 通过在图 1 所示夹持器 32  
 30 组成的连续存储环中的摩擦力或柔性联接被可释放地夹持。

可选择的另一种安装是将旋转环固定在侧壁上而不是基座和竖直支撑

件上。

图4和图5以不同的方位详细示出了夹持器32，夹持器32包括用来容纳容器18的一个边缘的槽33和用来容纳容器两个边缘以便可释放夹持(利用摩擦)容器直到手工选出的一对指状件34和35。这是由指状件34和35的柔性辅助实现的(夹持器32由ABS型塑料制成)。另外还有一对凸起34a和35a(仅35a示出)，用来与容器18上的作为柔性联接的配合槽联接。图4A在31a处示出这种槽的一个。当然，如图1所示，在31b处示出了第二槽。这些槽在珠宝盒中构成，用来构成夹持CD上打印说明书的内部接片。

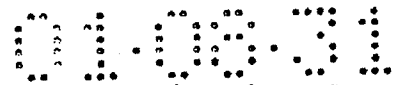
每个夹持器32包括能让夹持器通过铰链机构50依次柔性联接起来构成夹持器的连续环的铰链联接装置。图6A和图6B示出多个铰接在一起的夹持器。这种联接装置具有足够的柔性以使环在链轮齿上转过。这种咬在一起的联接方式可让连续环轻松的装配或者可以添加额外的夹持器来扩充支架的容量，这在后边将会讨论。

现在特别参照图4和图5，夹持器32包括第一和第二咬式联接件(snap together coupling)。第一件是阳或球形件17，第二件是插座或阴形件21，如图4和图5所示，第一件和第二件置于槽33的相对两侧。球形联接件17实际上是与相邻联接件的插座21咬接构成铰链50的圆柱形联接件。这在图6B中示出。这种形式的联接保证夹持器有足够的柔性以便转过图7中所示的链轮，同时，如图6A和6B所示，当夹持器处在行程中垂直的上下部分时，保证夹持器之间保持贴近关系。这种相接容器的贴近关系能使存储量最大。

如图7所示，联接件17的弯曲外表面通常会坐靠在链轮37之间的槽沟中。除了能让驱动链轮和由夹持器32构成的连续环有效配合外，这种形式的配合还能让夹持器32和与夹持器相连的容器如图2和图7所示那样散开，以便轻松地手工拿取容器18。联接件17中的槽19是工艺槽。

现在参照图2和支架的上部，驱动链轮由一对在轴40上旋转的链轮36和38组成。轴40以轴颈支承在支撑件14和16上。使用一对链轮给由夹持器32构成的连续环以平衡的驱动。为保证环中足够的张力，使用定型的承力块(用作垫片)来安装轴40。

如图3所示，所述的驱动器设置在支架或塔架的基座上，一对下驱动链轮22和24由电机28通过皮带轮装置30驱动。如上所述，驱动电机28可以由装在垂直支撑件上的开关以多种不同模式控制。



5 为了有效引导和保持由夹持器 32 构成的连续环, 侧支撑件 14 和 16 包括挡板 44 和 46, 如图 2 和图 3 所示。图 8 示出挡板 46 的详细视图和操作, 其中每个夹持器底部形成有可滑动联接的联接件 47, 其包括与引导挡板 46(及 44)相连的槽 42, 使得夹持器可以沿着竖直支撑件滑动及保持在垂直上下方向上。如图 2 示出的, 挡板 46 和 44 终止于顶部转弯处之前(及底部转弯处之前)以便承力块的安装。

图 9 示出支架的内部结构, 并结合图 2 和图 3 示出在支架的顶部珠宝盒如何散开以便拿取。

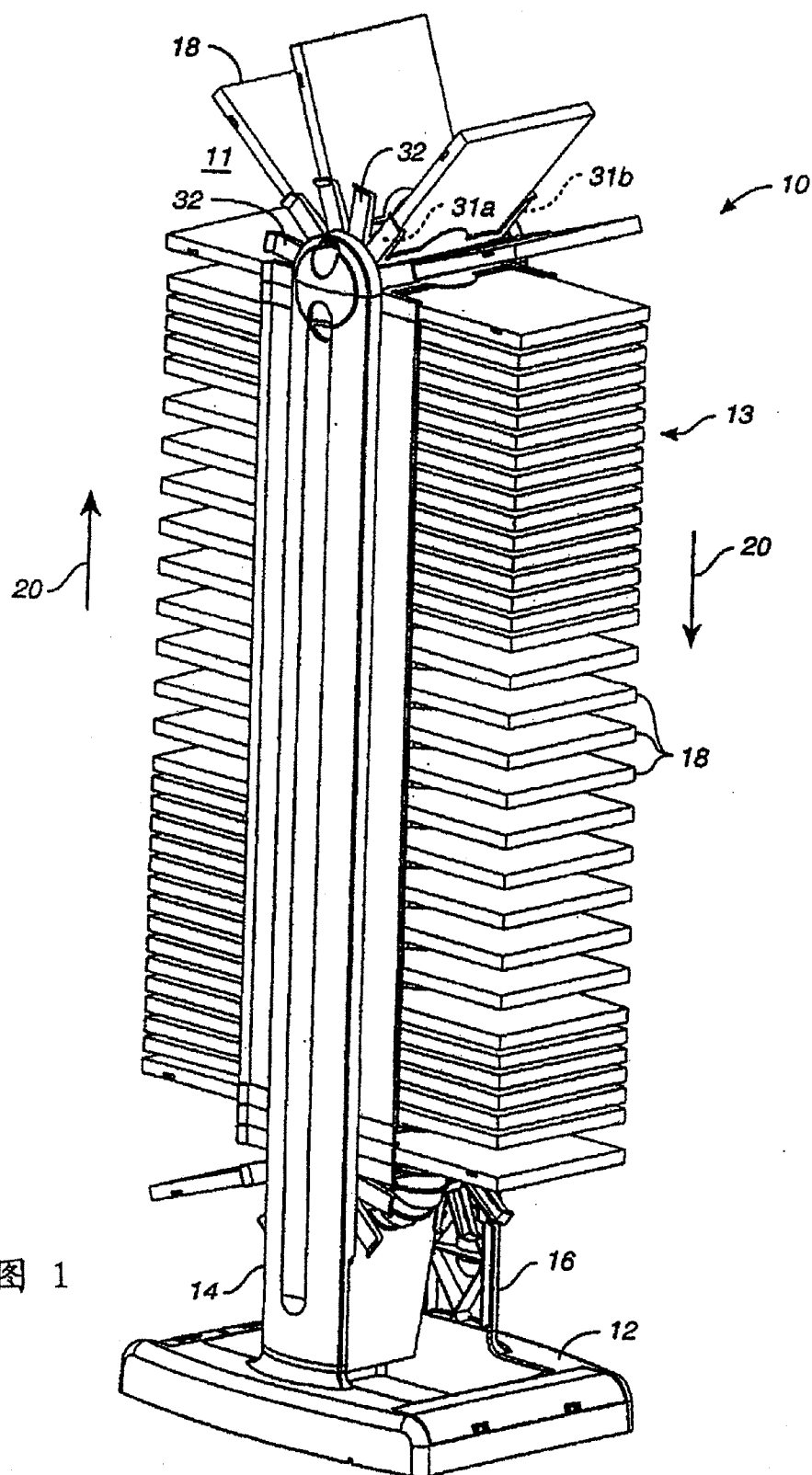
10 图 10 示出图 1 的变形, 左右竖直支撑件 14 和 16 现在分成标记为 16'a、16'b 和 16'c 三段。这样塔架或支架可以添加带咬合在一起增加的附加夹持器 32 的额外段 16'b, 以增加其容量。这样就提供了一种模块化结构。

最后, 为进一步实现 CD 选择的自动化, 每个容器 18 可以有一个附在其上的条形码, 借助于条形码阅读器, 能自动停止环的旋转, 使适当的或所选的 CD 位于图 1 所示散开的顶部 11 处。

15 为了提供更大的 CD 容量, 可以使用定型的夹持器 32'。夹持器 32' 是足够大的方形空盒, CD15 可以插入盒中并通过摩擦指状件 51 夹持。每个定制夹持器 32' 的底部都有与前述珠宝盒的夹持器 32 相同的联接件 17' 和 21'。因为这些夹持器或容器 32' 不需要与用于商业 CD 销售的珠宝盒一样大或耐用, 它们通常小于标准 CD 珠宝盒厚度(16mm)的一半。因此从组装的角度来看, 20 与 100 个标准商业珠宝盒相比, 支架上或许可以安装 250 个容器。除了夹持 CD15 以外, 夹持器 32' 上还有另外用于提示文字 52 的槽形空间。当然其中放置关于 CD 的文字说明书。图 12 是图 11 的横截面图, 示出了用于文字说明书 52 的额外空间。另外, 如果需要则如 53 所示出的, 每个夹持器 32' 包含用来擦除 CD 上的灰尘的毛毡擦。最后, 如衬垫 54 所示出的, 夹持器 32' 25 选是透明的, 以便 CD 或 CD 文字说明可以看见, 客户也好更轻松的选择喜爱的 CD。

图 13 示出的是另一种饼形的包括构成连续环的联接件 17' 和 21' 的夹持器 32'。在饼状楔形夹持器 32' 的中心是夹持 CD15 的中心小孔的摩擦轂 54。这样的摩擦轂可以出现在夹持器 32' 的一侧或者两侧(可夹持两张 CD)。此 30 时, 因为厚度已经减到最小, 所以可以达到更大的存储量。

这样为存储物品和 CD 珠宝盒和 CD 本身提供了改进的支架。





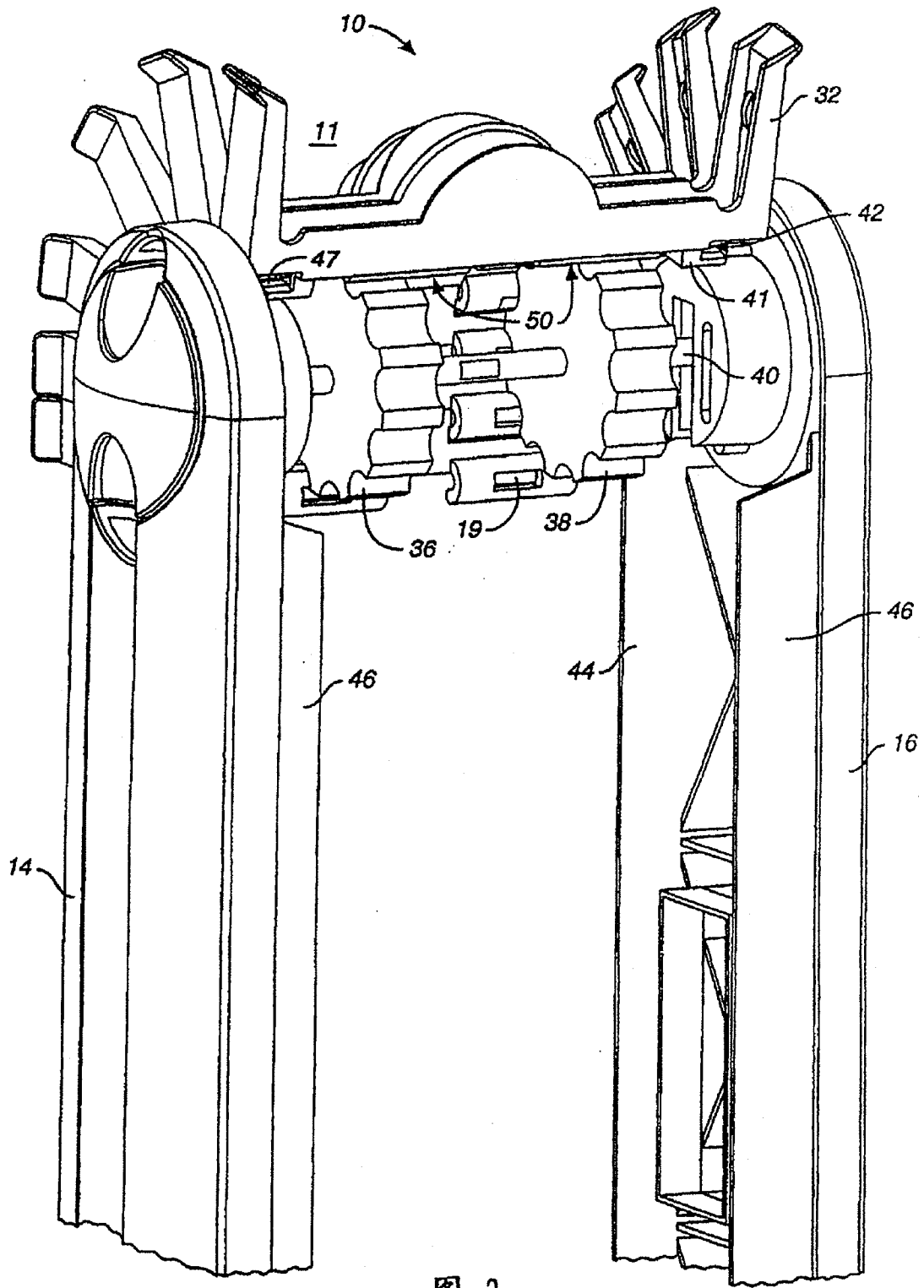
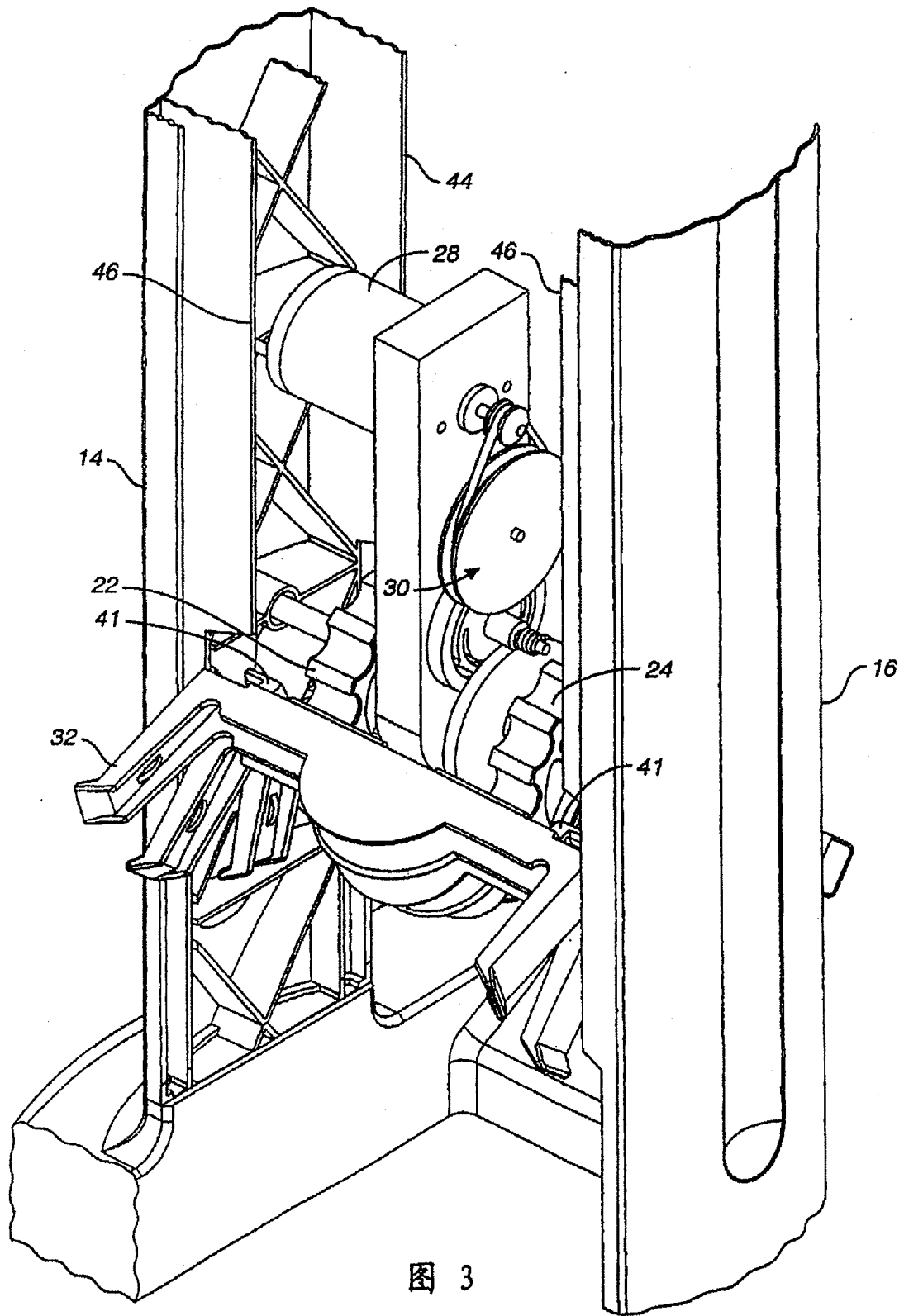


图 2



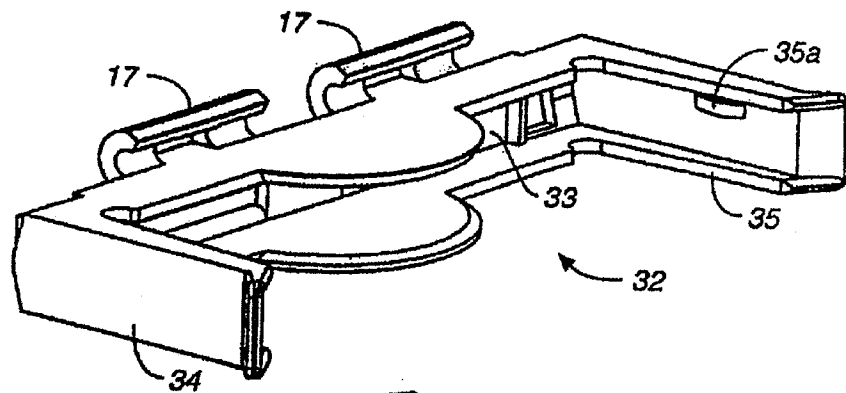


图 4

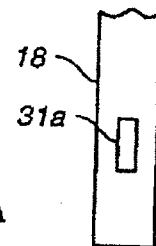


图 4A

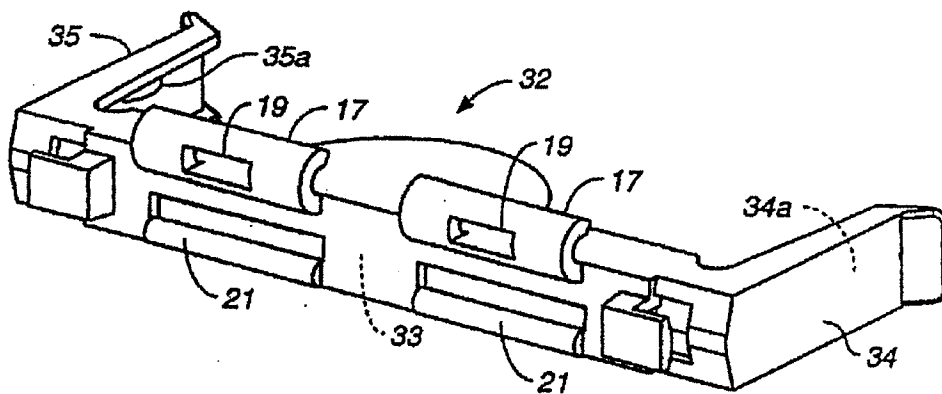


图 5

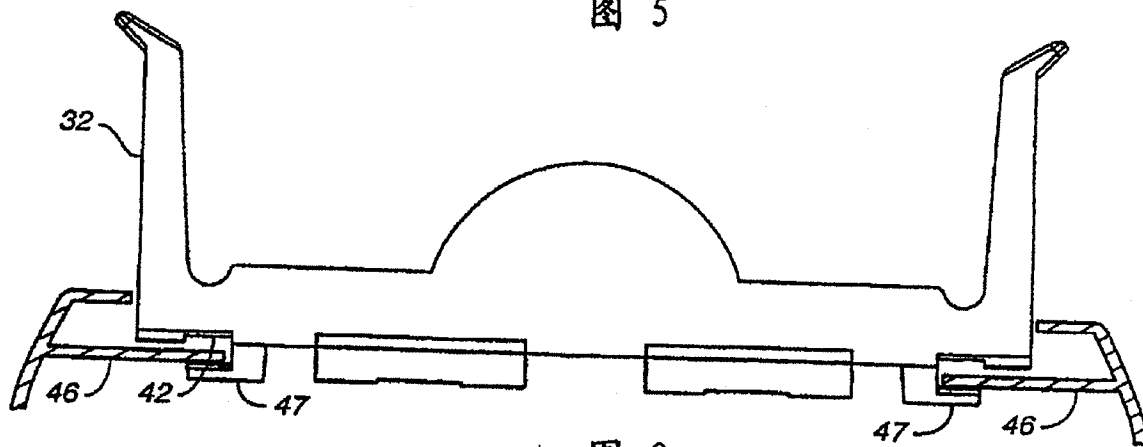


图 8

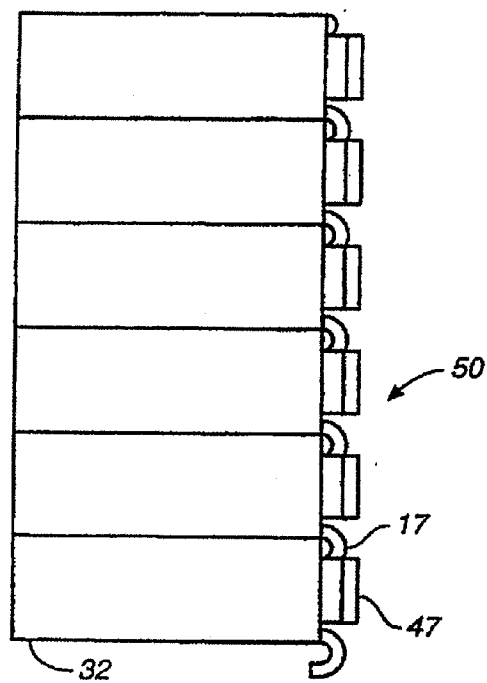


图 6A

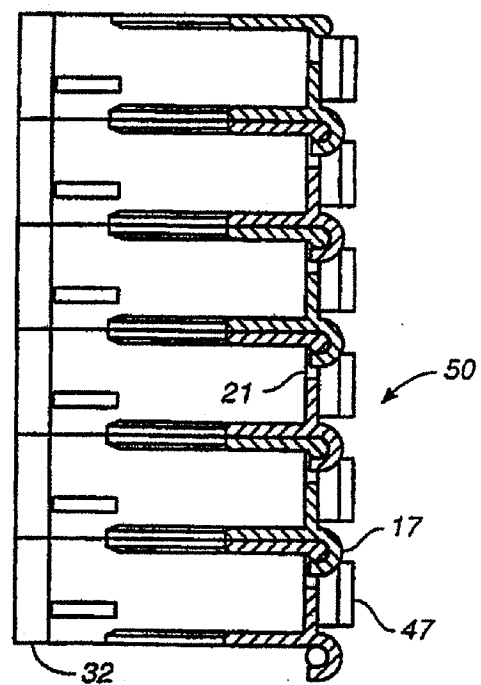


图 6B

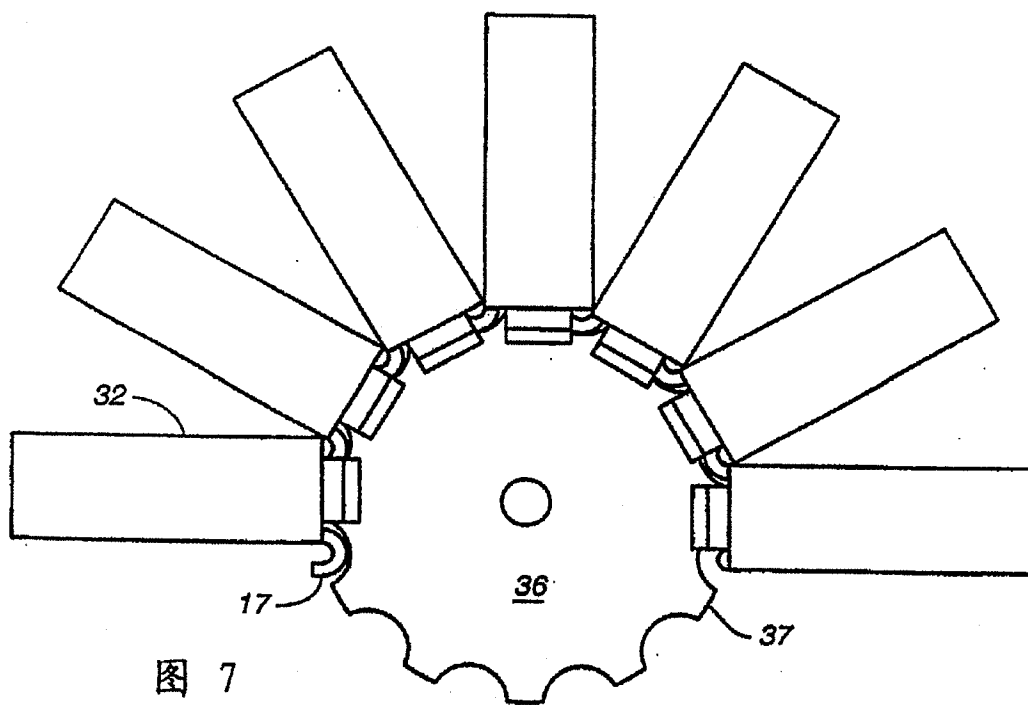
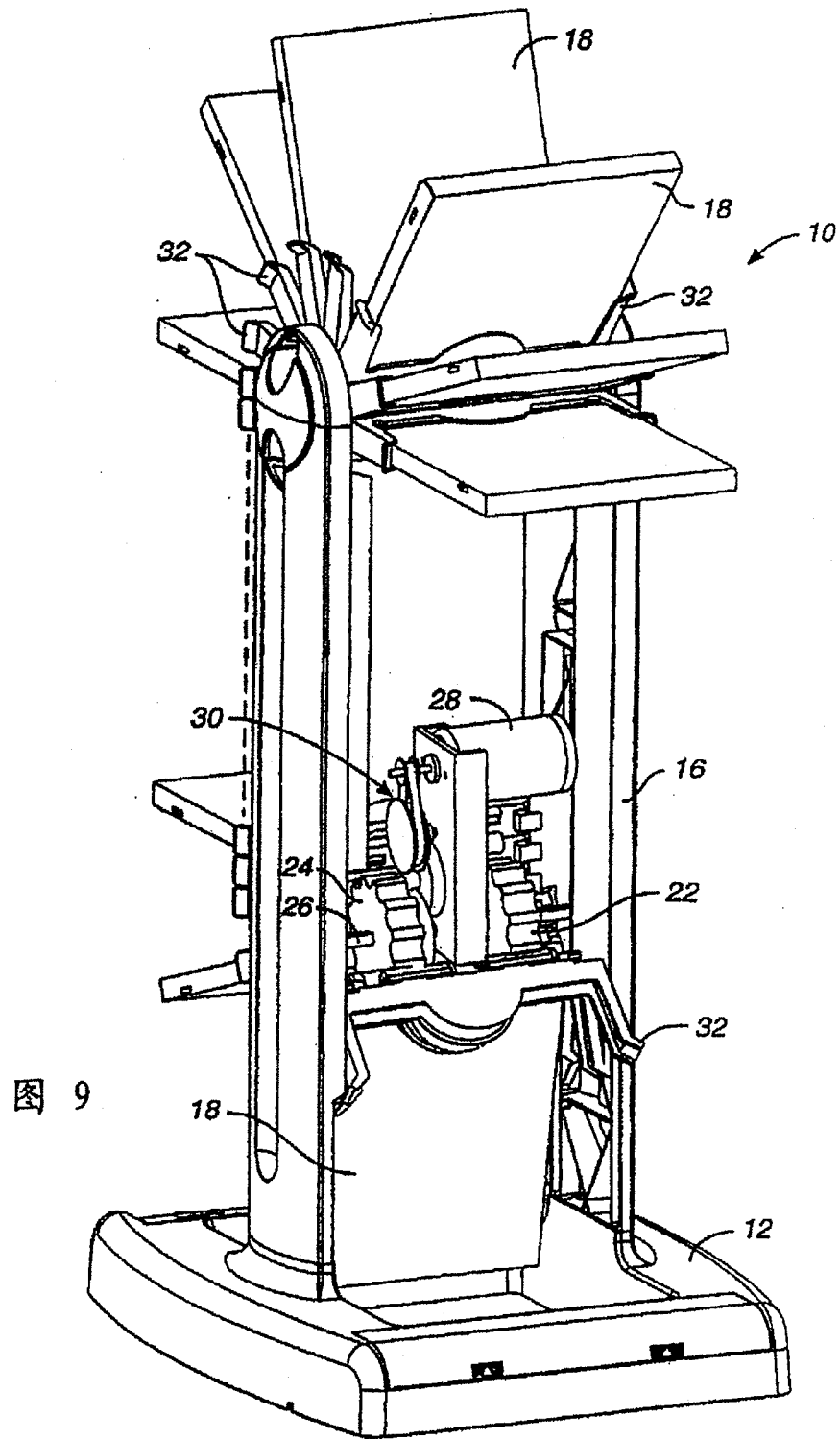


图 7



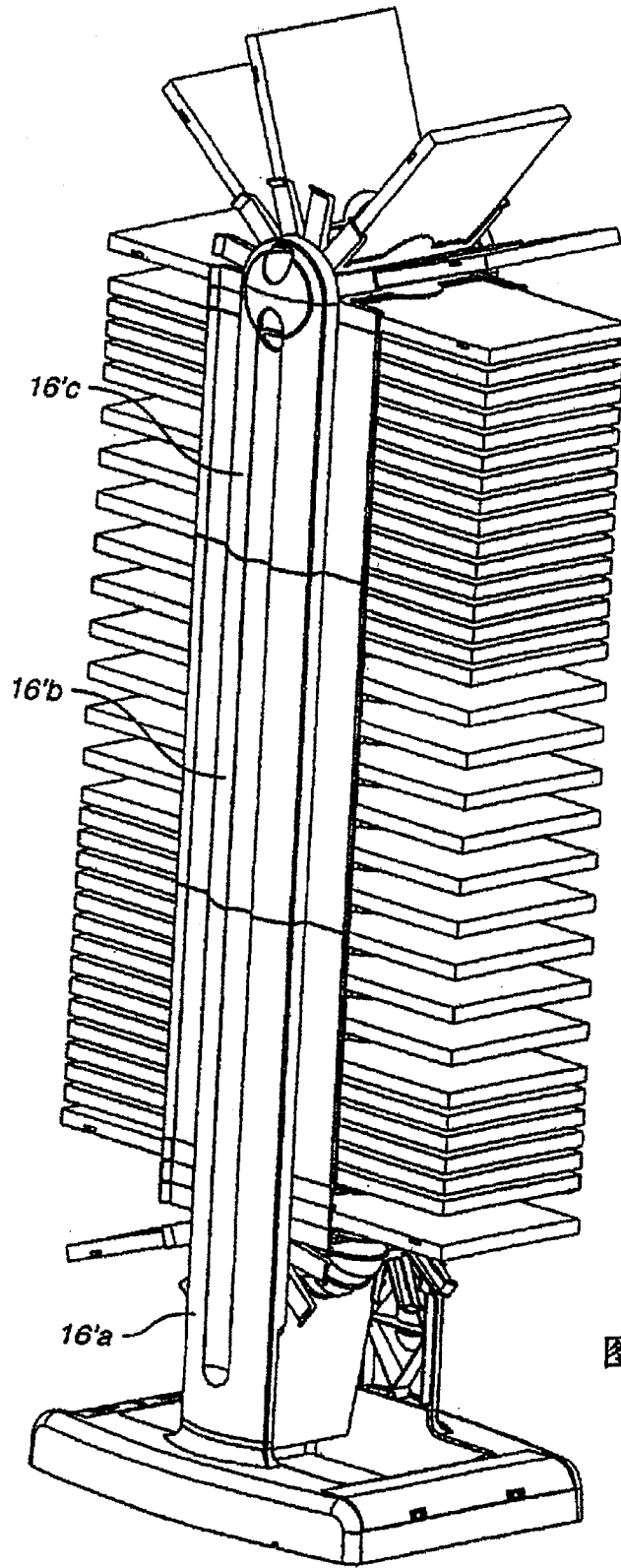


图 10

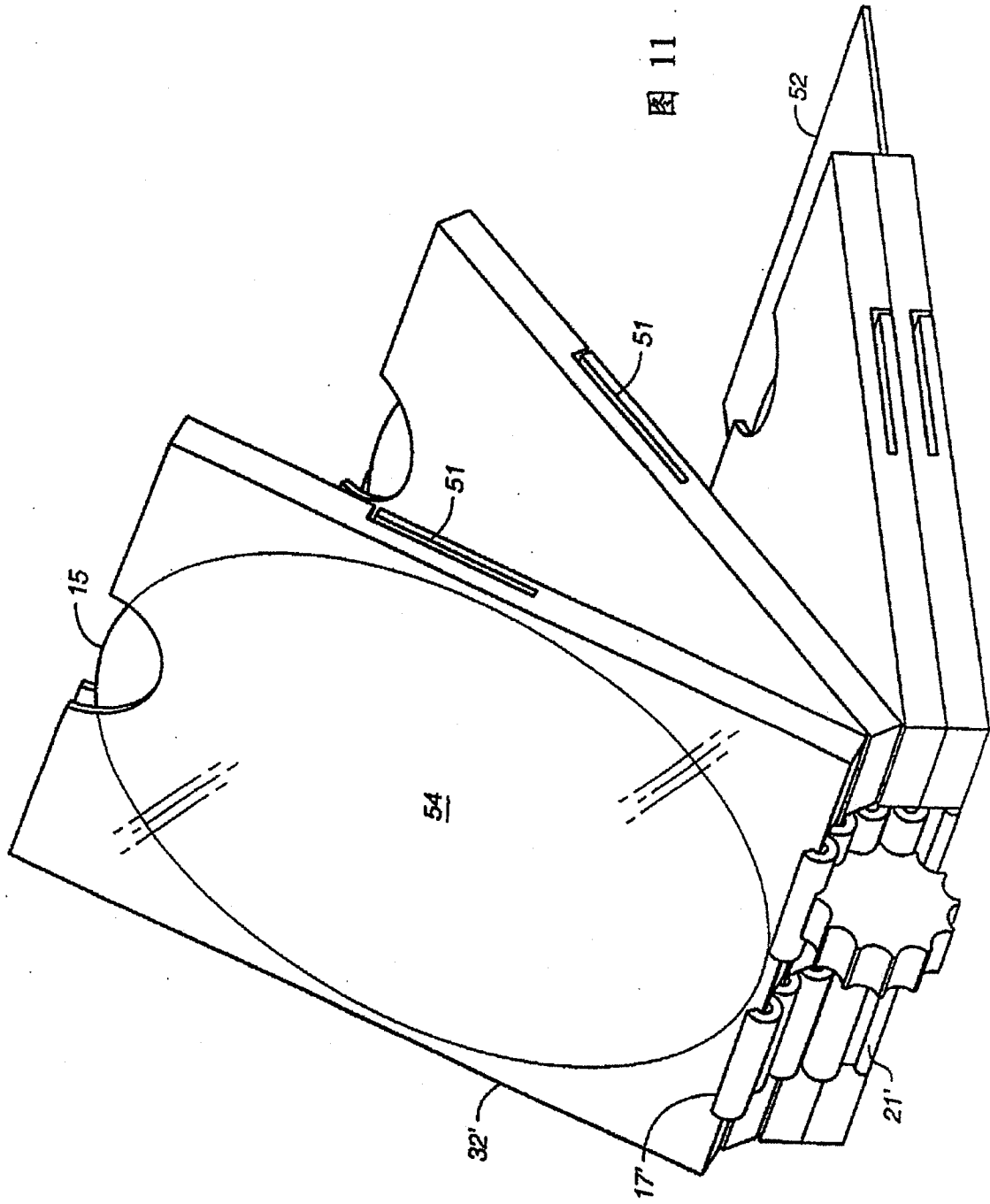
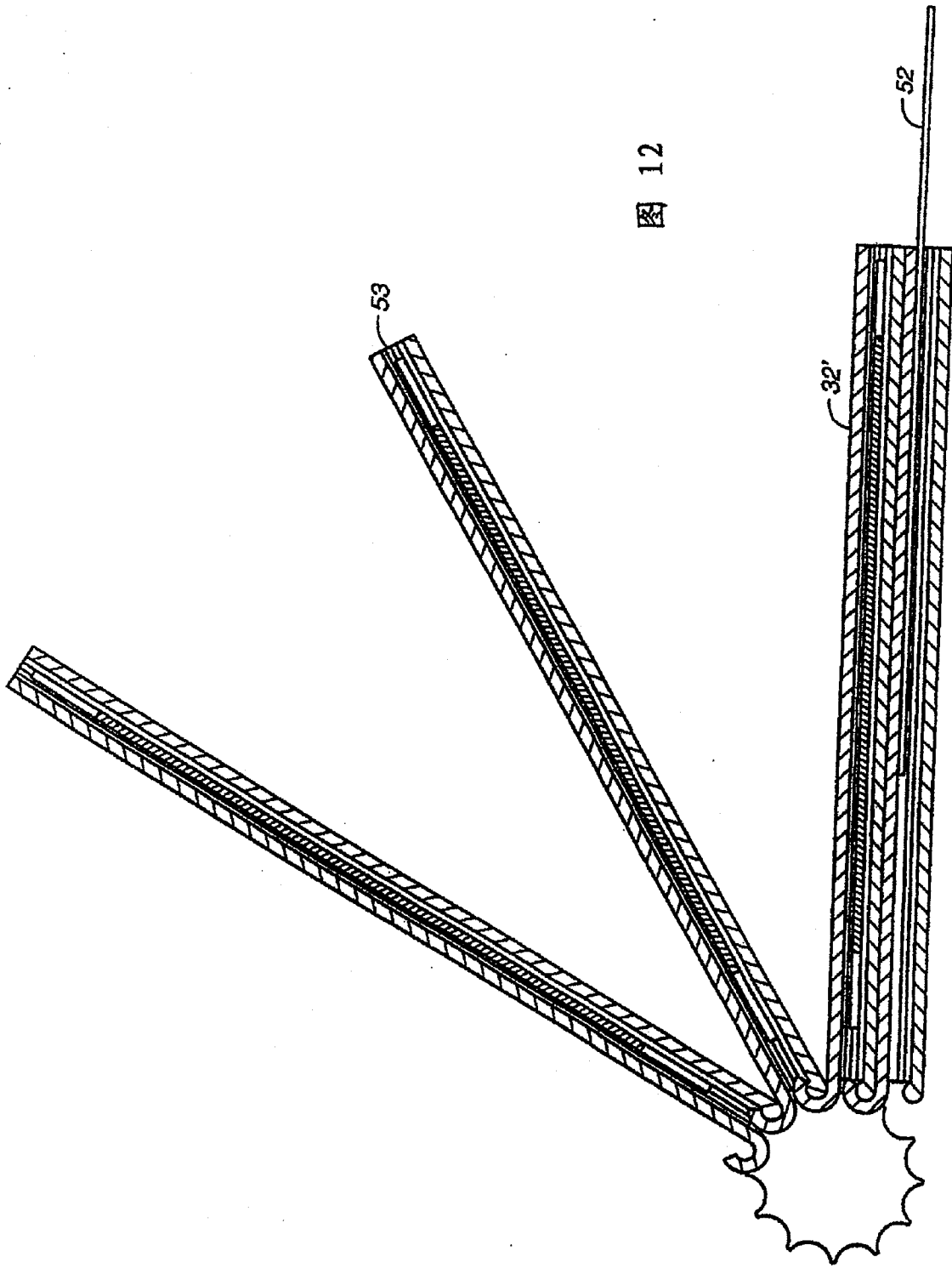


图 11

图 12





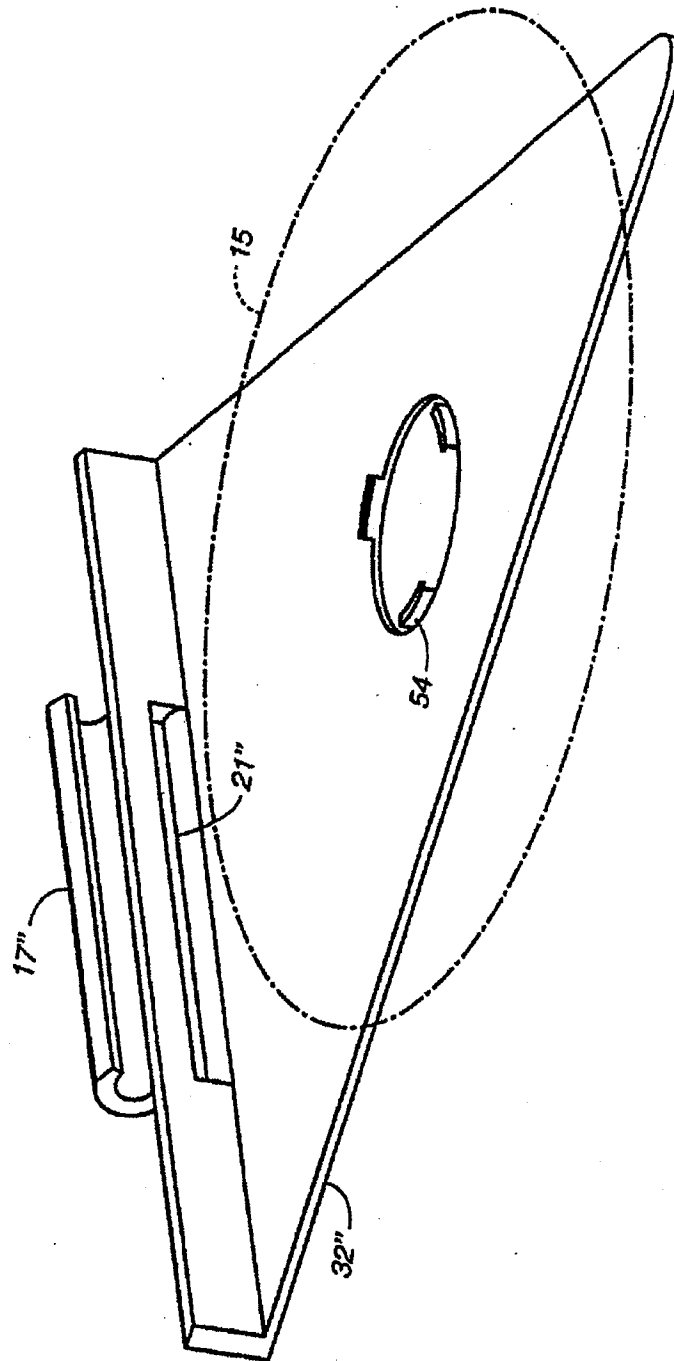


图 13



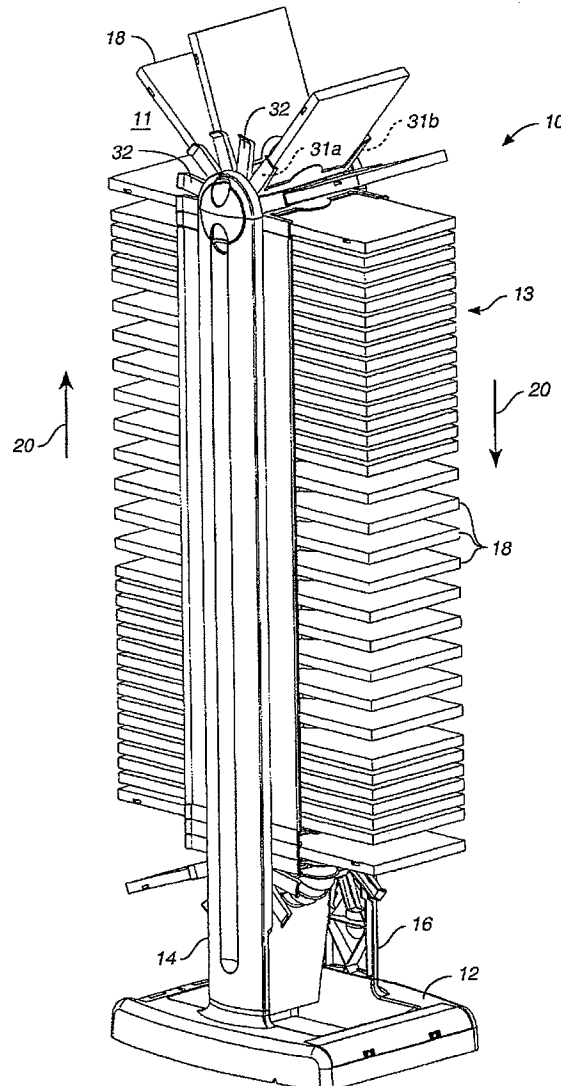
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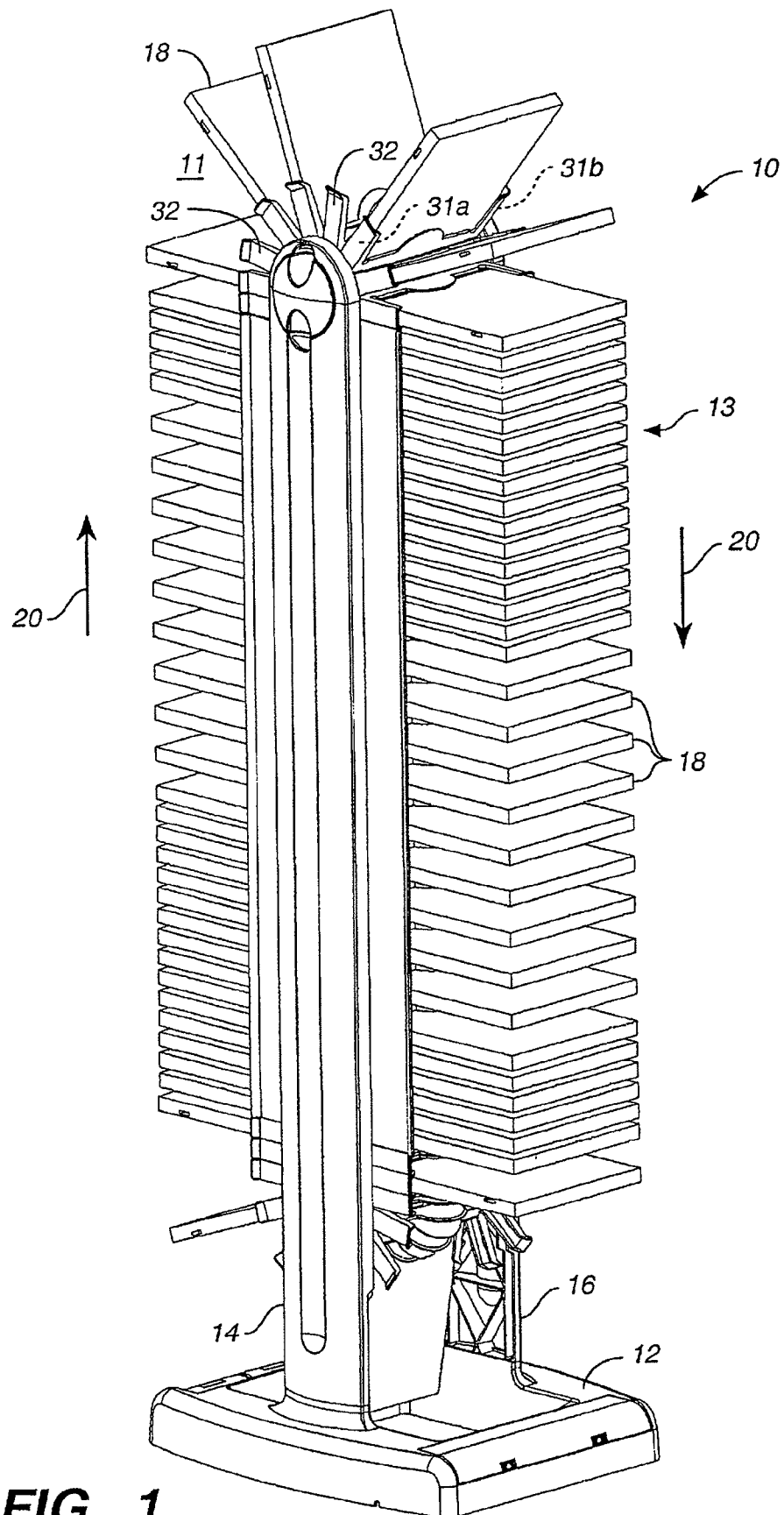
(19) **United States**(12) **Patent Application Publication**  
Caplan et al.(10) **Pub. No.: US 2001/0045400 A1**(43) **Pub. Date: Nov. 29, 2001**(54) **RACK FOR COMPACT DISCS****Related U.S. Application Data**(76) **Inventors: David Caplan, Las Vegas, NV (US);  
Charles E. Taylor, Sebastopol, CA  
(US)**(63) Continuation of application No. 09/240,308, filed on  
Jan. 29, 1999, now abandoned.**Publication Classification**(51) **Int. Cl.<sup>7</sup> ..... A47F 5/00**(52) **U.S. Cl. .... 211/40; 211/121; 211/1.57**

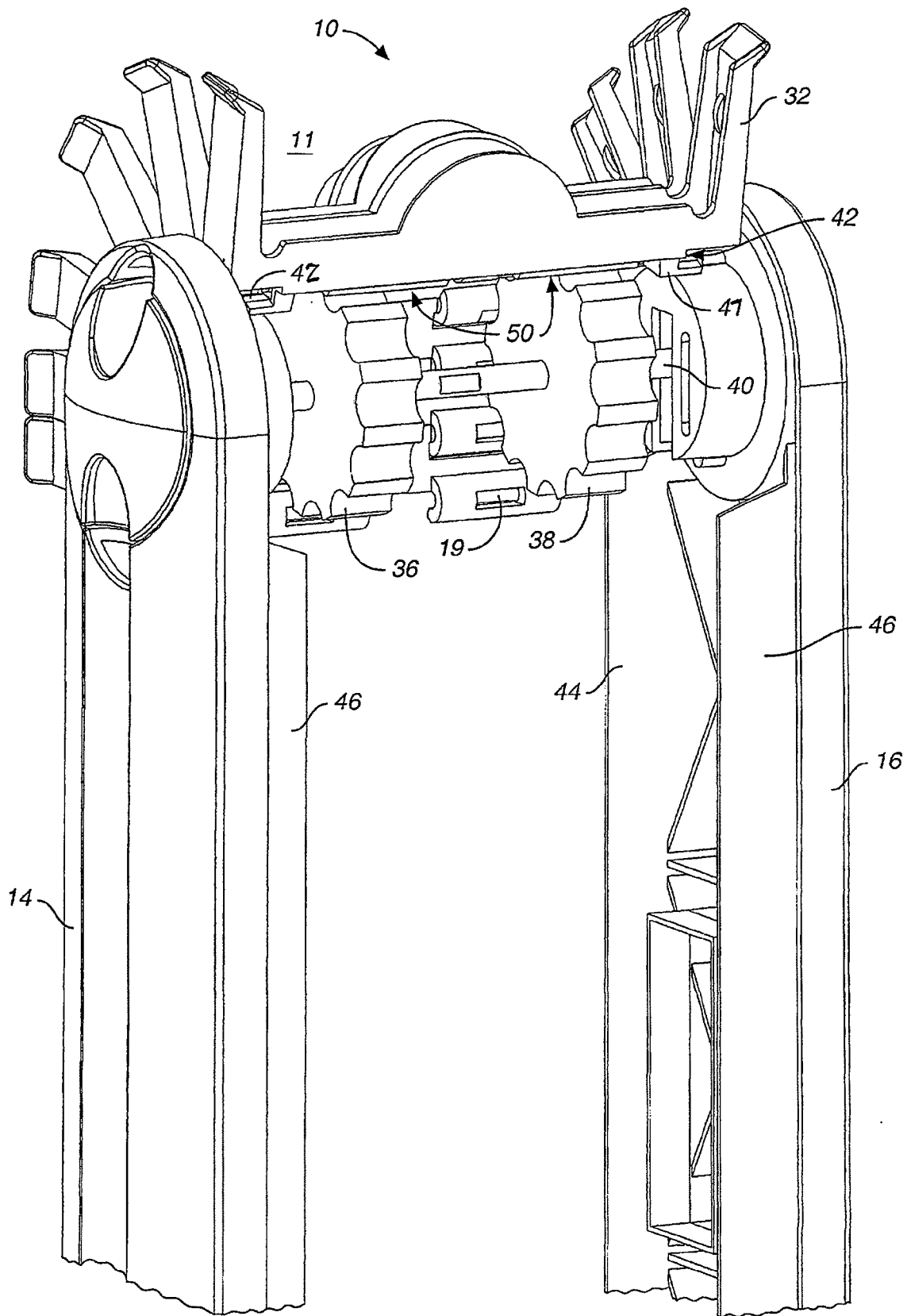
Correspondence Address:

**Sheldon R. Meyer, Esq.****FLIESLER DUBB MEYER & LOVEJOY LLP****Suite 400****Four Embarcadero Center****San Francisco, CA 94111-4156 (US)**(57) **ABSTRACT**

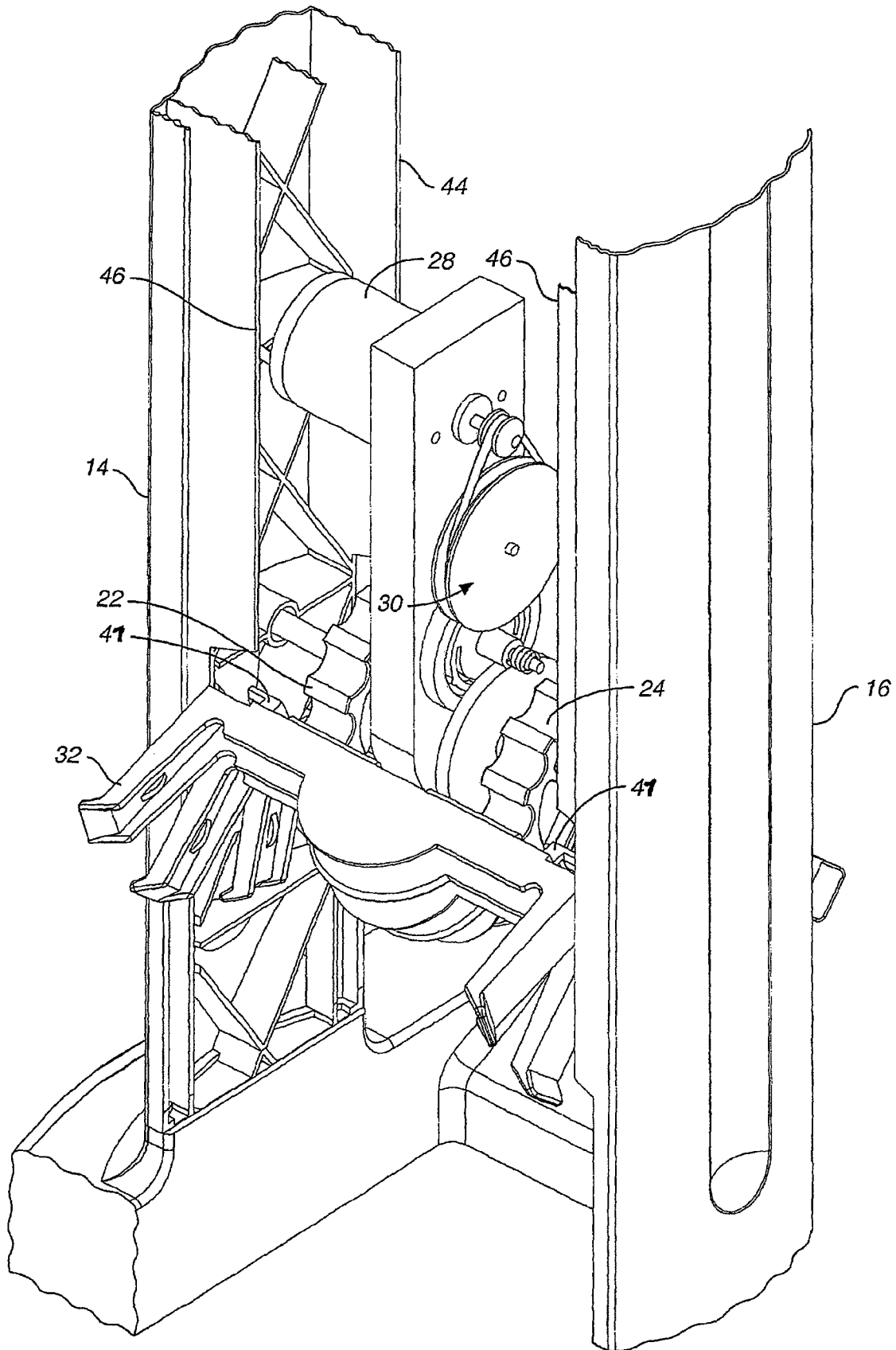
A motorized rack for holding the jewel cases or containers of CDs (or the CDs themselves) in a very compact manner includes a continuous loop formed of holders for the CD cases or other retainers which is driven by a pair of sprockets on which the holders are mounted for rotation. High density storage is provided by spacing the holders and their associated CD containers contiguously to one another and then removal is facilitated by allowing the holders and containers to fan out at the top the vertical tower for manual removal.

(21) **Appl. No.: 09/873,807**(22) **Filed: Jun. 4, 2001**

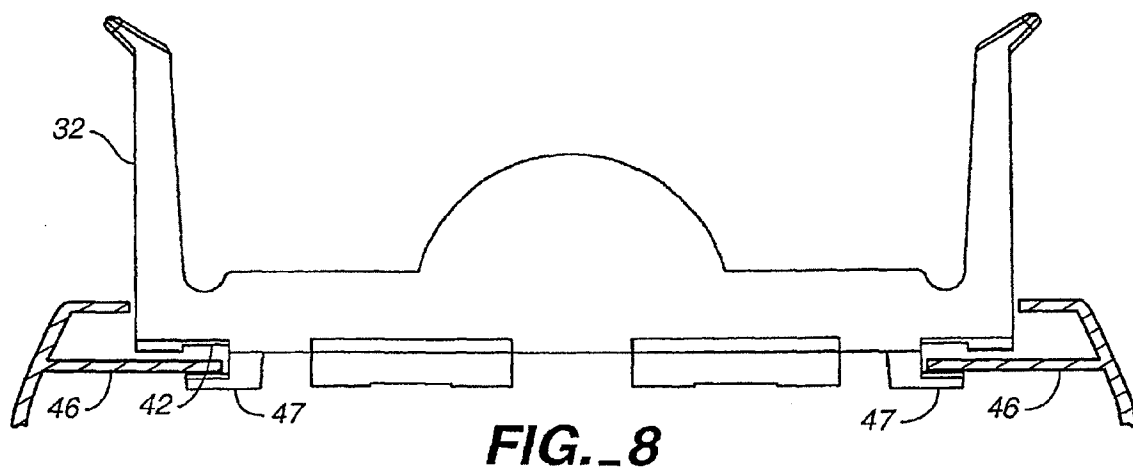
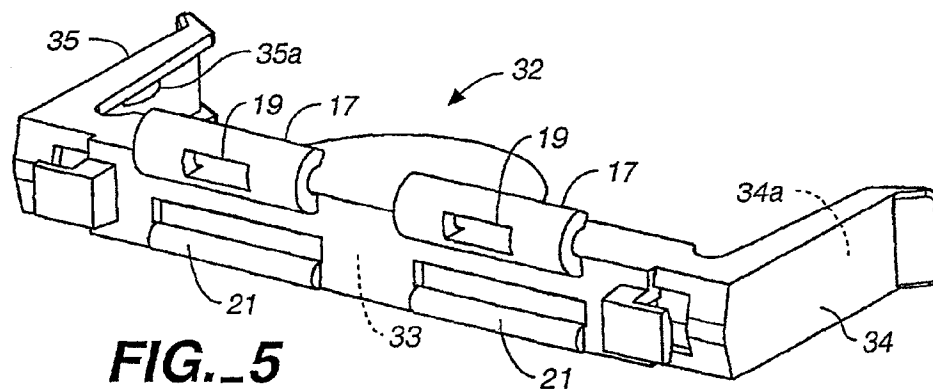
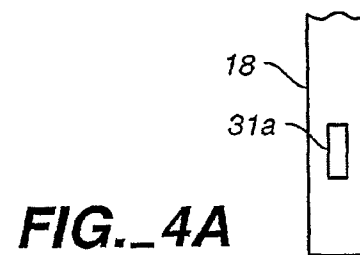
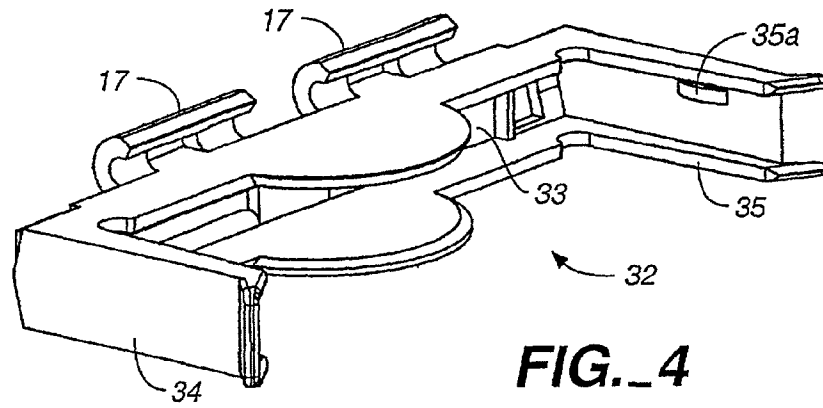


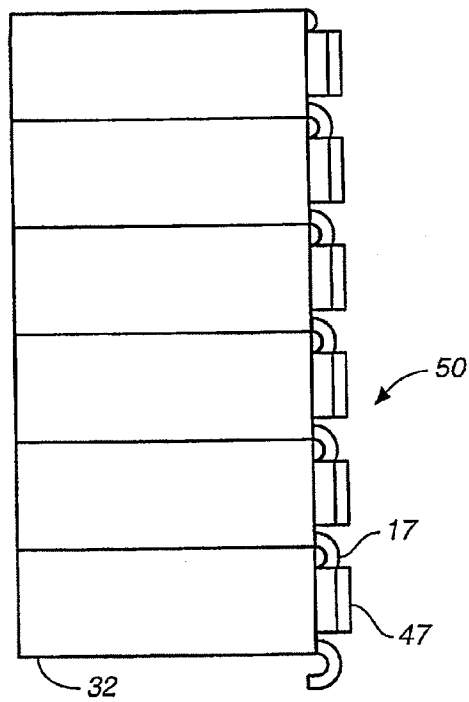


**FIG. 2**

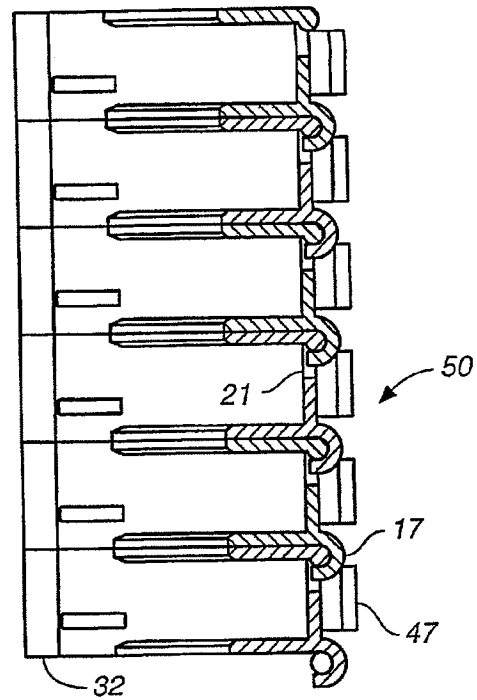


**FIG.\_3**

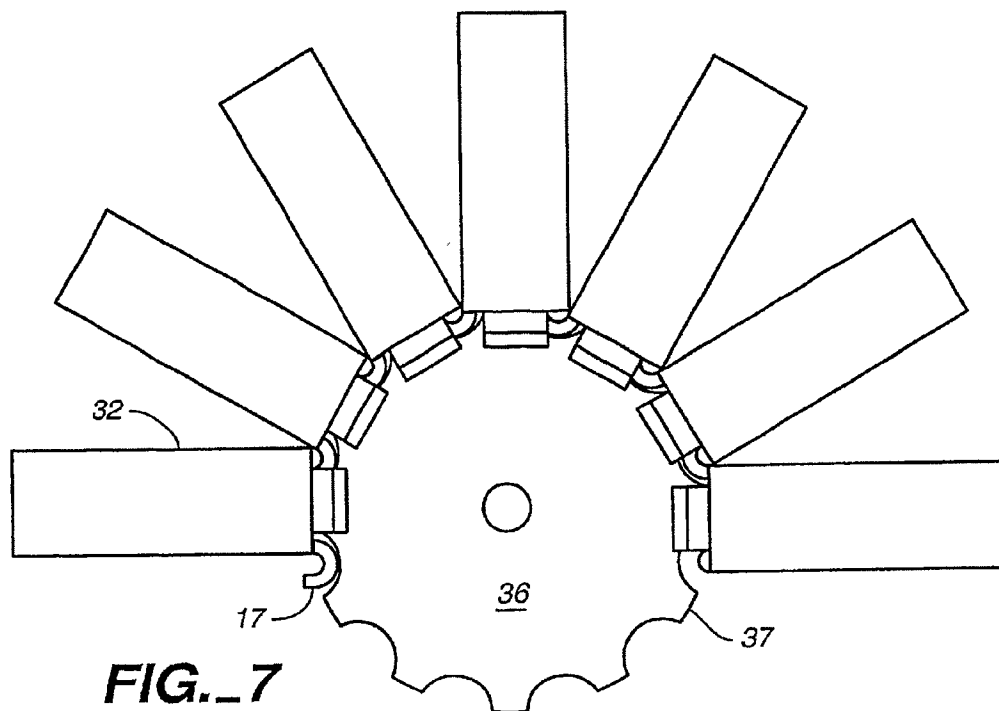




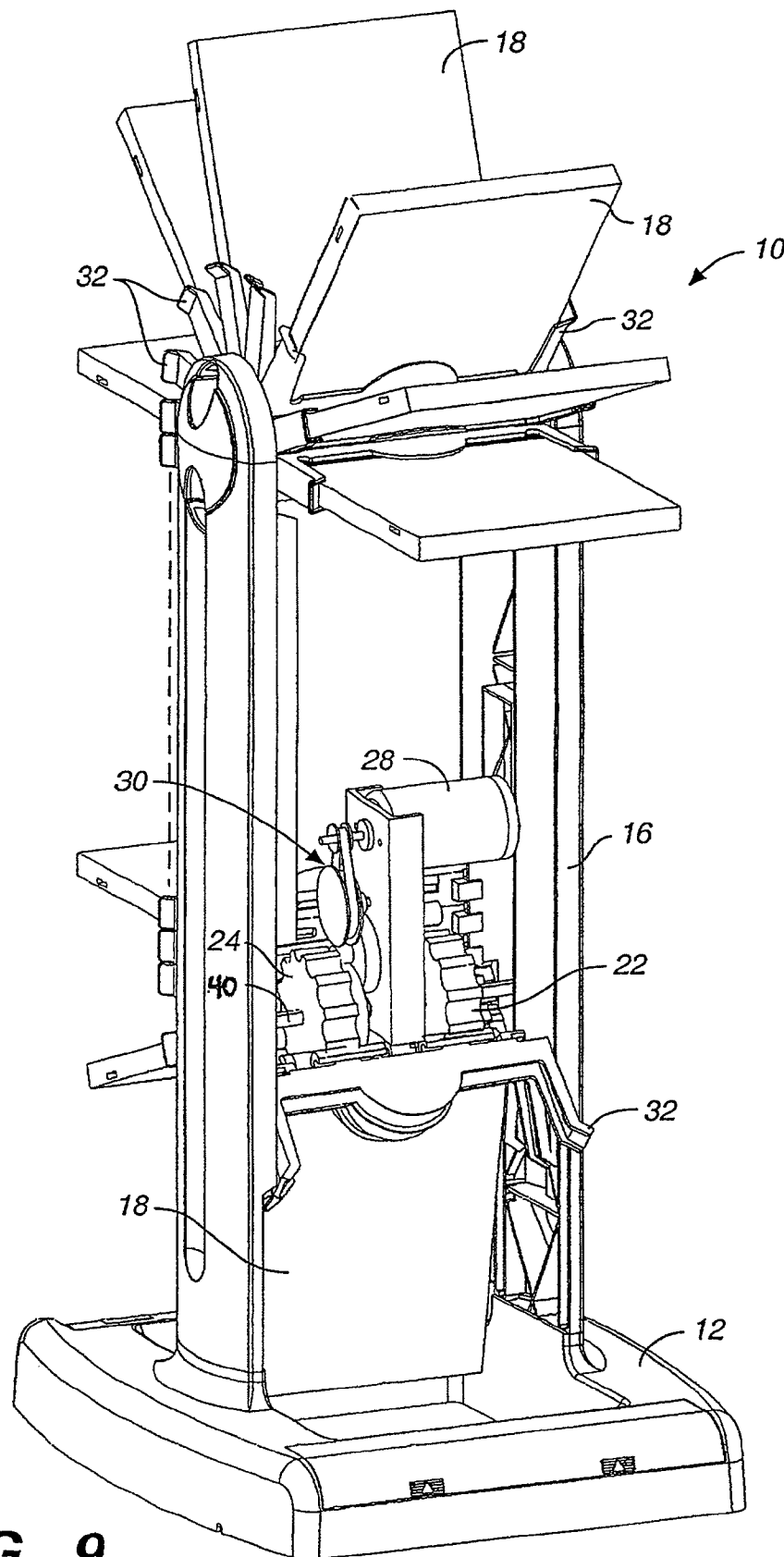
**FIG.\_6A**



**FIG.\_6B**

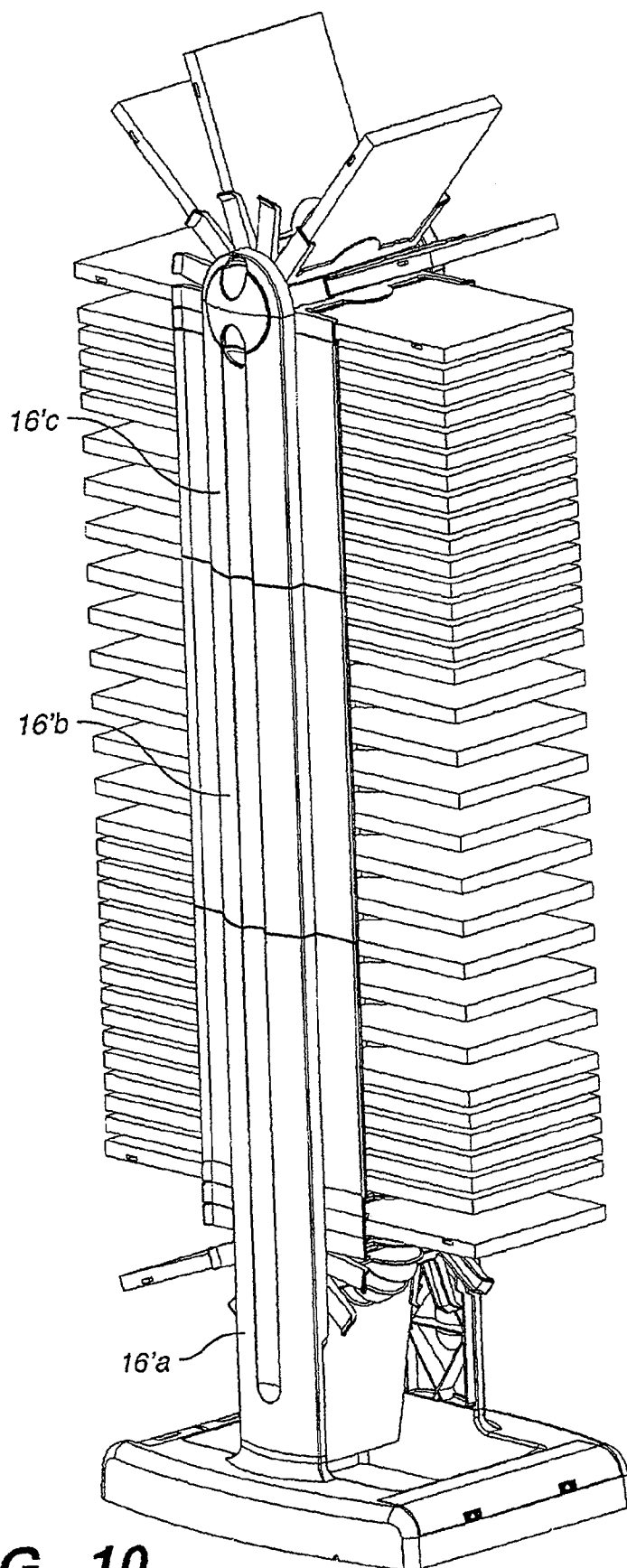


**FIG.\_7**

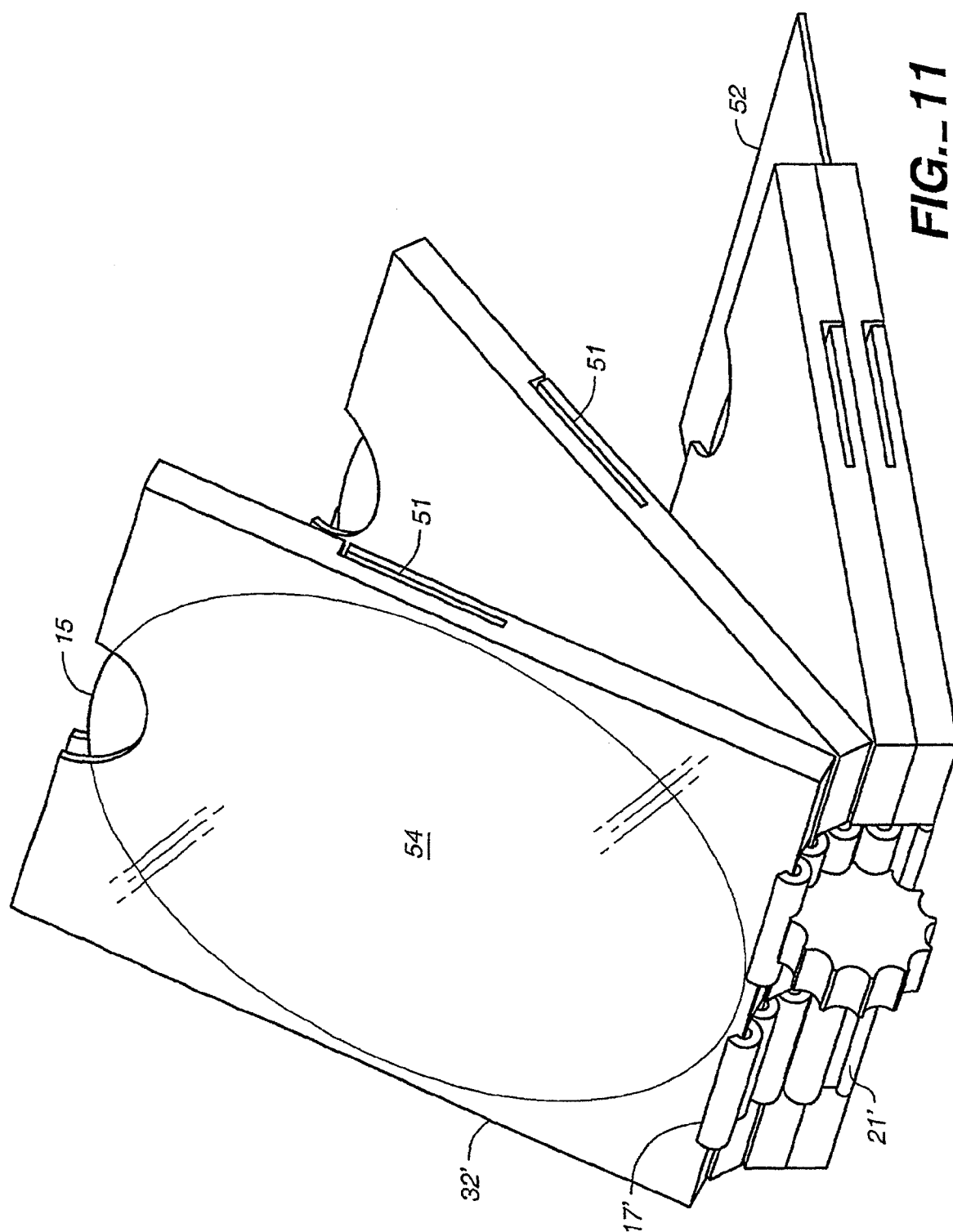


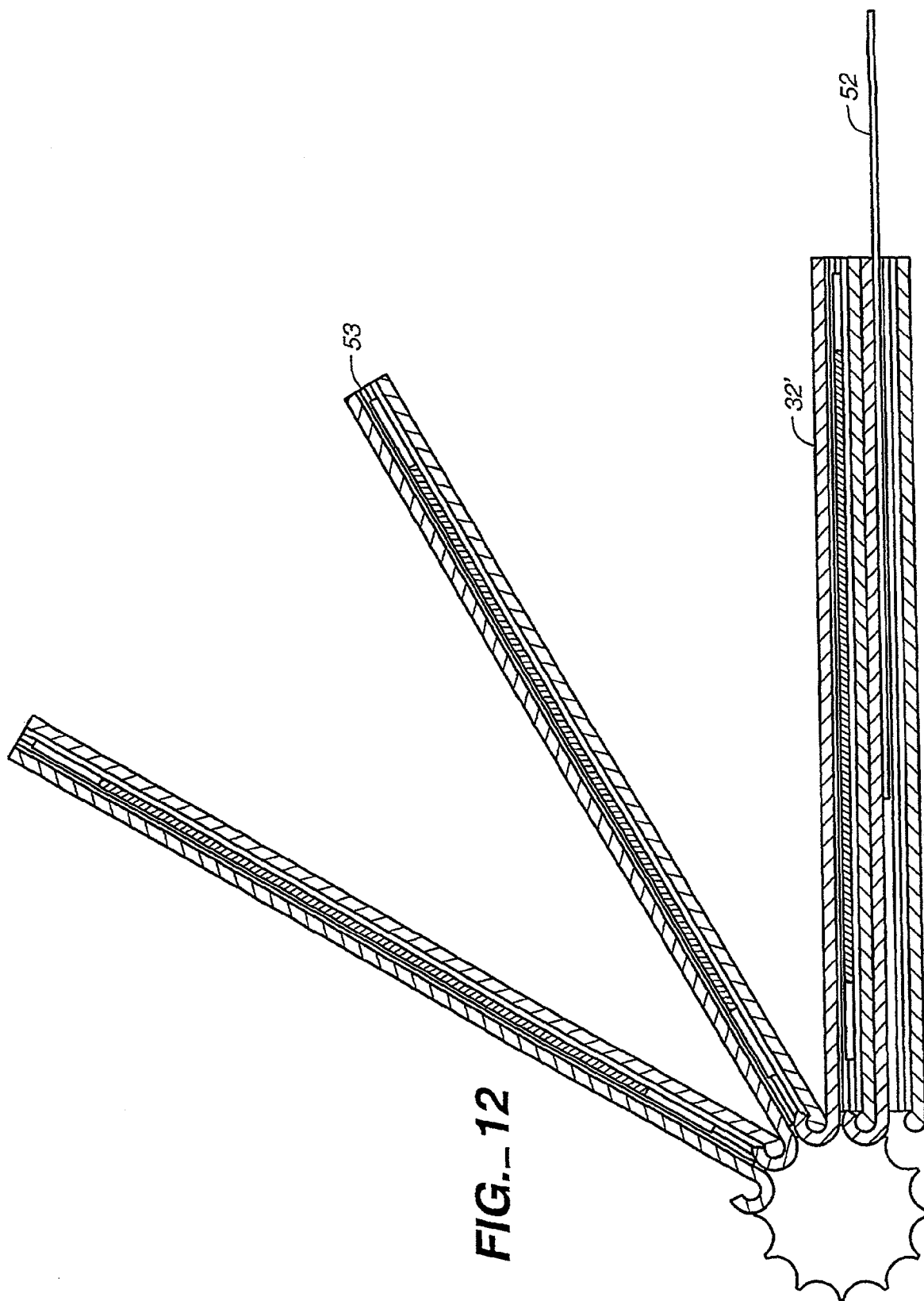
**FIG. 9**

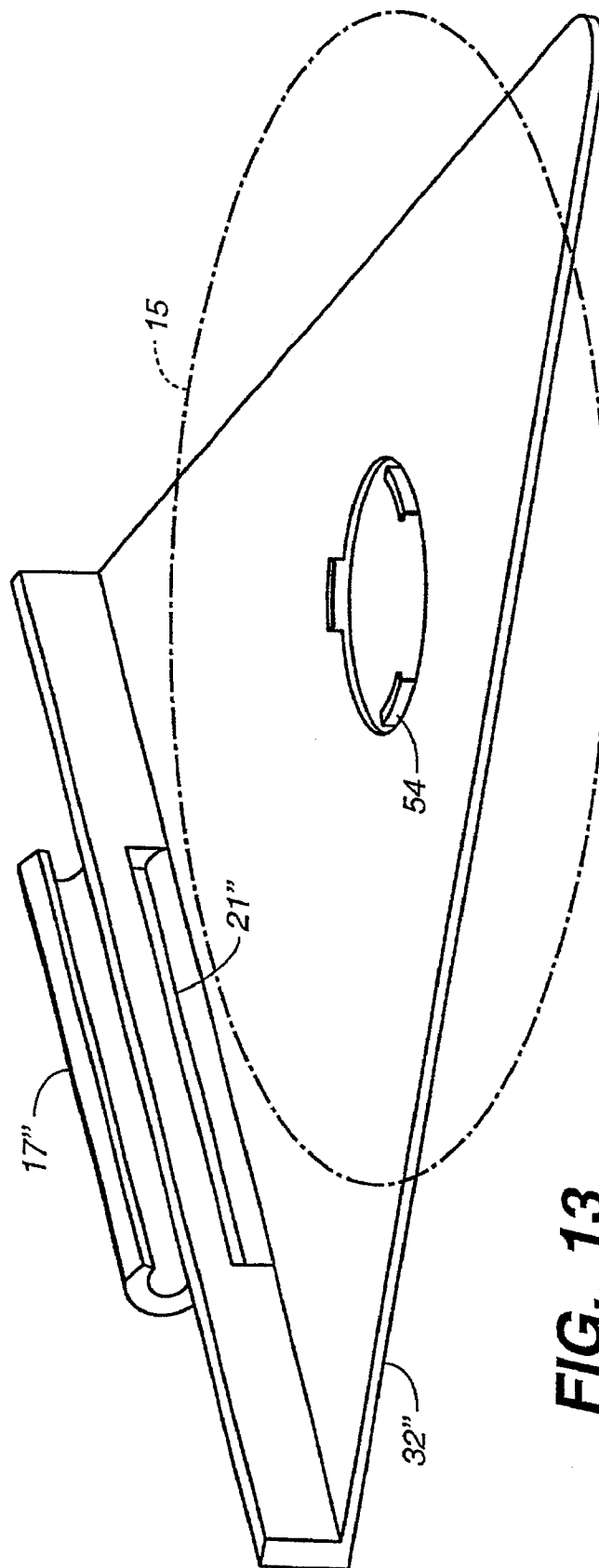




**FIG. 10**







## RACK FOR COMPACT DISCS

### INTRODUCTION

[0001] The present invention is restricted to a rack for holding objects such as compact discs and other similar items. More specifically, where the rack is a motorized storage device for holding up to 100 compact discs (CDs) in their individual containers or so called jewel cases or more than 300 when special retainers are used.

### BACKGROUND

[0002] CD holders are well known which have no moving parts and which are in the form of vertical towers or horizontal cabinets. Where a large amount of CDs are stored it is difficult to physically make a selection. This is especially true for the lower part of a vertical tower. Thus it is desired to have a motorized type of CD storage device or rack to facilitate selection. It is also desirable to have a motorized rack which is very simple in design and stores the jewel cases or containers of the CDs (or the CDs themselves on retainers) in a very compact manner.

### OBJECT AND SUMMARY OF INVENTION

[0003] It is therefore an object of the present invention to provide an improved rack for holding objects such as CDs.

[0004] In accordance with the above object, a rack for holding objects such as CDs comprises a plurality of holders, each holder including means for releasably retaining, by friction and/or flexible coupling, one of the objects and each holder including coupling means for joining a plurality of the holders together to form a continuous loop. Means for mounting the loop for movement are provided to convey a selected object (CD) to a position for manual selection where the object may be released from the holder.

[0005] FIG. 1 is a perspective view of a rack embodying the present invention.

[0006] FIG. 2 is an enlarged detailed perspective view of an upper portion of the rack of FIG. 1.

[0007] FIG. 3 is an enlarged detailed view of a lower portion of the rack of FIG. 1.

[0008] FIG. 4 is a perspective view of a holder of the present invention shown in one view.

[0009] FIG. 4A is a side view of a container which would be held by the holder of FIG. 4.

[0010] FIG. 5 is a perspective of the same holder of FIG. 4 shown in another view.

[0011] FIG. 6A is a side elevation view illustrating several holders of FIGS. 4 and 5 coupled together.

[0012] FIG. 6B is a cross-sectional view of FIG. 6A.

[0013] FIG. 7 is side elevational view illustrating the holders of FIG. 6A as they would be rotated around a sprocket.

[0014] FIG. 8 is a cross-sectional view illustrating a holder of FIGS. 4 and 5 as it would be retained in the rack of FIG. 1.

[0015] FIG. 9 is a perspective view similar to FIG. 1 which has been cut away to show the interior mechanism of the rack and its operation.

[0016] FIG. 10 is a perspective view similar to FIG. 1 illustrating an alternative embodiment.

[0017] FIG. 11 is a perspective view of an alternative embodiment.

[0018] FIG. 12 is a cross-sectional view of FIG. 11.

[0019] FIG. 13 is a perspective view of an alternative embodiment.

### DESCRIPTION OF PREFERRED EMBODIMENTS:

[0020] FIG. 1 is a perspective view of the rack of the present invention where several containers 18 or so called jewel boxes containing CDs are stored on a conveyer-like apparatus. The rack is a motorized device for holding up to 100 CDs in their individual jewel cases. These are linked together on an endless belt. As will be discussed later the belt is driven by an electric motor and by appropriate controls may be rotated for example in a clockwise direction 20 to the top of the tower where as indicated at 11 containers are fanned out to thus facilitate their manual removal by a human hand. Normally, however, to accommodate the greatest number of containers 18 the containers are held substantially contiguous to one another (as indicated at 13) so that here removal would be difficult.

[0021] The continuous loop of containers 18 is vertically mounted on a pair of opposed and spaced vertical supports 14 and 16 which are attached to a base 12. A vertical support at its upper end includes controls (not shown) for rotating in the direction 20 or the opposite direction, if desired, at either a high or low speed. All of the structure illustrated in FIG. 1 is composed of an ABS-type plastic. Objects or containers 18 are releasably retained by friction or by flexible coupling in the continuous storage loop shown in FIG. 1 by the holders 32.

[0022] An alternative mounting, instead of a base and vertical supports, would be affixing the loop for rotation against a wall.

[0023] A holder 32 is shown in greater detail in FIGS. 4 and 5 in different orientations and includes a slot 33 configured to receive one edge of a container 18 and a pair of fingers 34 and 35 for receiving a pair of edges of the container for releasably retaining (by friction) the container until manually selected. This is aided by the flexibility of the fingers 34 and 35 (holder 32 is constructed of ABS plastic). In addition there are a pair of projections 34a and 35b (only 35a is illustrated) for interlocking with mating slots on the container 18 which act as a flexible coupling. FIG. 4A illustrates one of these slots at 31a. Then, of course, as is illustrated in FIG. 1 there would be a second slot at 31b. These slots are formed in the jewel cases to form interior tabs to retain printed information on the CD.

[0024] Each holder 32 includes hinged coupling means allowing the holders to be flexibly coupled to one another by a hinge mechanism 50 to form a continuous loop of holders. FIGS. 6A and 6B illustrate the several holders 32 hinged together. The coupling means are also sufficiently flexible to permit turnaround of the loop on a sprocket. It is a snap

together type of coupling so that the continuous loop may be easily assembled or as will be discussed later additional holders may be added to expand the capacity of the rack.

[0025] Referring now specifically to FIGS. 4 and 5, holder 32 includes first and second snap together couplings. One coupling is of the male or ball type 17 and the other, the socket or female type 21 which as illustrated in FIGS. 4 and 5 are placed on opposite sides of the slot 33. The so called ball type coupling 17 is actually a cylindrical shape to snap into socket 21 of the next adjacent coupling to form hinge 50. This is illustrated in FIG. 6B. This type of coupling ensures that the holders are sufficiently flexible to rotate around a sprocket 36 as shown in FIG. 7; and at the same as illustrated in FIGS. 6A and 6B when they are in the vertical up and down portions of travel to maintain their physical contiguous relationship with one another. Such close relationship allows for contiguous containers to maximize storage.

[0026] As shown in FIG. 7, the curved exterior of coupling 17 normally is seated in the groove between teeth 37. Besides allowing for effective engagement of a drive sprocket with the continuous loop formed by the holders 32 this type of mating engagement makes possible the fan out of the holders 32 and their associated containers as illustrated in both FIGS. 2 and 7, so that a container 18 may be easily removed manually. Slot 19 in coupling 17 is an artifact of the molding process.

[0027] Now referring to FIG. 2 and the upper portion of the tower, the drive sprockets consist of a pair of sprockets 36 and 38 which rotate on a shaft 40 which is journaled in the support towers 14 and 16. The use of a pair of sprockets gives a balanced drive to the continuous loop formed by the holders 32. To ensure sufficient tension in the loop customized bearing blocks (that act as shims) are used to mount shaft 40.

[0028] Such drive is provided as illustrated in FIG. 3 at the base of the rack or tower where a pair of lower drive sprockets 22 and 24 are driven by a motor 28 through a pulley arrangement 30. As discussed above, the drive motor 28 may be driven from a switch on a vertical support in many different modes.

[0029] To effectively guide and retain the continuous loop formed by holders 32 the side supports 14 and 16 include the rails 44 and 46 as best illustrated both in FIGS. 2 and 3. A detailed view and the operation of the rails 40 is shown in FIG. 8 where a slidable interlock unit 47 is formed on the base of each of the holders and includes the slot 42 with interlocks with the guides 46 (and also 44) to allow the holders to slide along the vertical supports, and be retained, in the vertical up and down directions. As illustrated in FIG. 2 the rails 46 and 44 terminate before the top turnaround point (and also the bottom turnaround point) to facilitate installation of the bearing blocks.

[0030] FIG. 9 illustrates the interior of the rack and effectively combines FIGS. 2 and 3 showing how the jewel cases fan out at the top portion of the rack for easy removal.

[0031] FIG. 10 illustrates a variation of FIG. 1 where the left and right vertical support members 14 and 16 are now segmented indicated as 16'a, 16'b, and 16'c; thus the tower or rack may have an additional segment 16'b added with the

additional holders 32 snapped together to increase its holding capacity. Thus, a type of modular construction has been provided.

[0032] Finally, to further automate the selection of CDs, each container 18 may have a bar code strip attached to it with a bar code scanner which can automatically stop the rotation of the loop with the appropriate or selected CD at the fanned out top portion 11 as shown in FIG. 1.

[0033] In order to provide for even greater CD holding capacity customized holders 32' may be used which are in the form of a substantially square housing into which a compact disc 15 may be inserted and held by the frictional fingers 51. The bottom of each of the customized holders 32' have the same type of coupling 17', 21' as existing as the holders 32 for the jewel boxes. Since these holders or containers 32' need not be as large or durable as the jewel boxes used for commercial sale of CDs, they are typically less than one-half the thickness (that is 16 mm) of a standard CD jewel case. Thus, from a packing standpoint perhaps 250 containers may be mounted on the rack, compared to 100 standard commercial jewel cases. In addition to holding the CDs 15, there is another slotted space for promotional printed literature 52. It has a written description of the CD of course. FIG. 12 is a cross-section of FIG. 11 illustrating the extra space for the written description 52. In addition, if desired and for example as is shown at 53, each holder 32' may contain a felt wiper for wiping dust off the CD. Finally, as illustrated by the lining 54, the holders 32' are preferably transparent so that either the CD itself or the written description may appear so that the user may more easily select a appropriate disc.

[0034] FIG. 13 illustrates yet another type of holder 32" which is pie shaped and includes the couplings 17" and 21" which form a continuous loop. In the center of the pie shaped wedge 32" is a friction-type hub 54 which retains the central aperture of the CD 15. Such friction hub may appear on only one side of the retainer 32" or on both sides so that two CDs are retained. Here because the thickness has been reduced to a minimum, even greater storage is feasible.

[0035] Thus an improved rack for the storage of objects and cd jewel boxes and cds per se have been provided:

What is claimed is:

1. A rack for holding objects, comprising:

a plurality of holders, each holder including means for releasably retaining, by friction and/or flexible coupling, one of the objects and each holder including coupling means for joining a plurality of said holders together to form a continuous loop;

means for mounting said loop for movement to convey a selected said object to a position for manual selection where said object may be released from said holder.

2. The rack of claim 1 wherein,

said coupling means is sufficiently flexible to permit turnaround of said loop on a sprocket.

3. The rack of claim 1 wherein,

said coupling means form a snap together hinge mechanism between each pair of adjacent holders.

4. The rack of claim 3 wherein,

said coupling means of said holders each includes first and second snap together couplings, one of which includes a socket, the other of which includes a ball with the ball of one holder adapted to coupled with this socket of a adjacent holder.

5. The rack of claim 1 wherein,

said means for mounting said loop for movement includes a vertically oriented framework including a pair of opposed and spaced side support members extending upwardly from a base and upper and lower sprockets each mounted for rotation on a shaft journaled between said side support members and means for driving at least one of said sprockets said loop being mounted for rotation on said upper and lower sprockets each of said holders including means for engaging said sprockets when rotated around them.

6. The rack of claim 6 wherein,

said spaced vertical supports include guide rails and where each of said holders includes a means for slidably interlocking with said rails for sliding the holders along said spaced supports.

7. The rack of claim 7 wherein,

said guide rails terminate near one of said sprockets.

8. The rack of claim 8 wherein,

said sprockets cause said holders and retained objects to fan out at a turnaround between vertically upward and downward motions of said loop whereby a manual selection of an object may be made.

9. A rack for holding and displaying compact disc containers and similar items and for allowing the manual selection of one of said containers comprising:

a vertically oriented framework including a pair of opposed and spaced side support members extending upwardly from a base;

upper and lower sprockets, each mounted for rotation on a shaft journaled between said side support members, and means for driving at least one of said sprockets;

a plurality of holders each having a slot configured to receive one edge of a said container and a pair of flexible fingers extending from said slot for receiving a pair of edges of a said container and releasably retaining such container until manually selected;

a flexible conveyor formed in a continuous loop by a plurality of said holders being flexibly coupled to one another so that said held containers in said holders in vertical portions of said loop are substantially contiguous to one another;

said loop being mounted for rotation on said upper and lower sprockets, each of said holders including means for engaging said sprockets when rotated around them, said sprockets providing a turnaround for said holders of said loop between vertically up and down motions of said loop for allowing said substantially contiguous containers to fan out whereby a said manual selection of a container may be made where said container is released from said holder.

10. A rack as in claim 9 where said side support members are segmented to allow additional side support segments to be added whereby the holding capacity of said rack may be increased.

11. A rack as in claim 9 where said upper and lower sprockets each include a pair of sprockets to provide for a balanced drive.

12. A rack as in claim 9 where said fingers of said holders include a pair of projections for interlocking with mating slots of said container to releasably retain said container.

\* \* \* \* \*